Unit 2
Day 5
Rational Exponents

$$-\frac{\sqrt{21}+7}{4}=\frac{-\sqrt{21}-7}{4}$$

$$\frac{-(\sqrt{21}+7)}{4}$$

80 $\dfrac{\sqrt{7}-1}{2\sqrt{7}+4\sqrt{2}} \cdot \dfrac{2\sqrt{7}-4\sqrt{2}}{2\sqrt{7}-4\sqrt{2}} = \dfrac{14-4\sqrt{14}-2\sqrt{7}+4\sqrt{2}}{28-32}$

$= \dfrac{14-4\sqrt{14}-2\sqrt{7}+4\sqrt{2}}{-4}$

$= \dfrac{7-2\sqrt{14}-\sqrt{7}+2\sqrt{2}}{-2}$

$$a^{\frac{1}{n}} = \sqrt[n]{a}$$

1)

$$4^{1/2}$$

2) $\left(24x^{6}\right)^{1/3}$

3) $-4^{-1/2}$

$$a^{\frac{m}{n}} = \sqrt[n]{(a)^m} \quad or \quad \left(\sqrt[n]{a}\right)^m$$

4) $(-8)^{2/3}$

5) $\left(24a^{7}\right)^{4/3}$

6) $\left(\frac{16}{5}\right)^{-2/3}$

Odds & Ends:

We know that $\sqrt{\sqrt[3]{5}} = \sqrt[6]{5}$ $\quad \left(5^{1/3}\right)^{1/2} = 5^{1/6} = \sqrt[6]{5}$

Therefore, $\sqrt[n]{\sqrt[m]{a}} = \sqrt[mn]{a}$

What is $\sqrt[3]{\sqrt{\sqrt[4]{x}}}$ $= \sqrt[24]{x}$

Write in a simplified radical form

4) $\sqrt[6]{4} = \left(2^2\right)^{\frac{1}{6}} = 2^{2/6}$

$= 2^{1/3}$

$= \sqrt[3]{2}$

$\sqrt[6]{2^2} = \sqrt[3]{2}$

5) $\sqrt[9]{64} = \sqrt[9]{2^6} = \sqrt[3]{2^2}$

$\sqrt[3]{4}$

6)

$\sqrt[3]{5} \cdot \sqrt{2} = 5^{1/3} \cdot 2^{1/2}$

$5^{2/6} \cdot 2^{3/6}$

$\sqrt[6]{5^2} \cdot \sqrt[6]{2^3}$

$\sqrt[6]{5^2 \cdot 2^3} = \sqrt[6]{200}$

7)

$\sqrt[5]{a^2} \cdot \sqrt{b} = a^{2/5} \cdot b^{1/2}$

$= a^{4/10} \cdot b^{5/10}$

$= \sqrt[10]{a^4} \cdot \sqrt[10]{b^5}$

$= \sqrt[10]{a^4 b^5}$

Does $\sqrt{x^2} = x$?

What if x is negative?

What does $\sqrt{x^2}$ equal? $\sqrt{x^2} = |x|$

8)

$$\sqrt{\left(7-\sqrt{52}\right)^2} = \left|7-\sqrt{52}\right| = -\left(7-\sqrt{52}\right) = \sqrt{52}-7$$

9) $\sqrt{\left(-2-a^2\right)^2} = \left|-2-a^2\right| = -\left(-2-a^2\right) = 2+a^2$

10)

$$\sqrt{\left(\sqrt{2}-1\right)^4}-\sqrt{\left(2-\sqrt{8}\right)^2}$$

$$\left|\left(\sqrt{2}-1\right)^2\right| - \left|2-\sqrt{8}\right|$$

$$\left(\sqrt{2}-1\right)^2 - -\left(2-\sqrt{8}\right)$$

$$2-\sqrt{2}-\sqrt{2}+1 + 2 + \sqrt{8}$$

$$5-2\sqrt{2}+2\sqrt{2} = 5$$

HOMEWORK

Unit 2 Day 5 plus Day 6 worksheets